

Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in this application.

Listing of Claims:

1 - 21 (Cancelled)

22. (New) A speech synthesis device comprising:

speech database storing means for storing a speech database created by way of dividing the sample speech waveform data obtained from recording human speech utterances into speech units, and associating the sample waveform data in each speech unit with their corresponding phonetic information;

AD speech waveform composing means for dividing phonetic information into speech units upon receiving the phonetic information of speech sound to be synthesized, for obtaining sample speech waveform data from the speech database corresponding to the phonetic information in a speech unit, and for generating speech waveform data to be composed by means of concatenating the sample speech waveform data in the speech unit; and

analog converting means for converting the speech waveform data received from the speech waveform composing means into analog signals;

wherein the speech database storing means divides the sample speech waveform data into the speech units of Extended CV, which is a contiguous sequence of phonemes without clear distinction containing a vowel or some vowels;

wherein the speech waveform composing means divides the phonetic information into speech units of Extended CV.

wherein the Extended CV contains at least one of a consonant C excluding a geminated sound (Japanese SOKUON), a semi vowel, and a syllabic nasal, a semi vowel y, a vowel V excluding a latter part of a long vowel and a second element of a diphthong, a latter part of a long vowel R, the second element of a diphthong J, a geminated sound Q, and a syllabic nasal N, and

wherein the phoneme sequence with heavier syllable weight is selected first as the Extended CV, assuming the syllable weight of C and y to be "0", and a syllable weight of V, R, J, Q and N to be "1".

23. (New) A speech synthesis device comprising:

speech database storing means for storing a speech database created by way of dividing the sample speech waveform data obtained from recording human speech utterances into speech units, and associating the sample waveform data in each speech unit with their corresponding phonetic information;

speech waveform composing means for dividing phonetic information into speech units upon receiving the phonetic information of speech sound to be synthesized, for obtaining sample speech waveform data from the speech database corresponding to the phonetic information in a speech unit, and for generating speech waveform data to be composed by means of concatenating the sample speech waveform data in the speech unit; and

analog converting means for converting the speech waveform data received from the speech waveform composing means into analog signals;

wherein the speech database storing means divides the sample speech waveform data into the speech units of Extended CV, which is a contiguous sequence of phonemes without clear distinction containing a vowel or some vowels;

wherein the Extended CV includes at least a heavy syllable with a syllable weight of "2" selected from a group consisting of (C)(y) VR, (C)(y) VJ, (C)(y) VN and (C)(y) VQ and a light syllable with the syllable weight of "1" as defined by (C)(y) V,

wherein the heavy syllable is given a higher priority than the light syllable for being selected as Extended CV,

wherein (C) denotes that C or some Cs are attached to V, and

wherein (y) denotes whether y or ys are attached to V.

24. (New) The speech synthesis device of claim 23, wherein the Extended CV further includes a superheavy syllable with a syllable weight of "3" such as (C)(y) VRN, (C)(y) VRQ, (C)(y) VJN, (C)(y) VJQ and (C)(y) VNQ, and


wherein the heavy syllable is given a higher priority than the light syllable and the superheavy syllable takes precedence over the heavy syllable for being selected as Extended CV.

25. (New) A computer-readable storing medium for storing a program for executing speech synthesis by means of a computer using a speech database constructed with sample speech waveform data associated with its corresponding phonetic information, the program comprising the steps of:

dividing phonetic information into Extended CVs upon receiving the phonetic information of speech sound to be synthesized;

obtaining sample speech waveform data corresponding to the divided phonetic information in Extended CV from the speech database; and

generating speech waveform data to be composed by means of concatenating the sample speech waveform data in Extended CV;

 wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV contains at least one of a consonant C excluding a geminated sound (Japanese SOKUON), a semi vowel, and a syllabic nasal, a semi vowel y, a vowel V excluding a latter part of a long vowel and a second element of a diphthong, a latter part of a long vowel R, the second element of a diphthong J, a geminated sound Q, and a syllabic nasal N, and

wherein the phoneme sequence with heavier syllable weight is selected first as the Extended CV, assuming the syllable weight of C and y to be "0", and a syllable weight of V, R, J, Q and N to be "1".

26. (New) A computer-readable storing medium for storing a program for executing speech synthesis by means of a computer using a speech database constructed with sample speech waveform data associated with its corresponding phonetic information, the program comprising the steps of:

dividing phonetic information into Extended CVs upon receiving the phonetic information of speech sound to be synthesized;

obtaining sample speech waveform data corresponding to the divided phonetic information in Extended CV from the speech database; and

generating speech waveform data to be composed by means of concatenating the sample speech waveform data in Extended CV;

wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV includes at least a heavy syllable with a syllable weight of "2" selected from a group consisting of (C)(y) VR, (C)(y) VJ, (Cy) VN and (C)(y) VQ and a light syllable with the syllable weight of "1" as defined by (C)(y) V,

wherein the heavy syllable is given a higher priority than the light syllable for being selected as Extended CV,

wherein (C) denotes that C or some Cs are attached to V, and

wherein (y) denotes whether y or ys are attached to V.


27. (New) The speech synthesis device of claim 26, wherein the Extended CV further includes a superheavy syllable with a syllable weight of "3" such as (C)(y) VRN, (C)(y) VRQ, (C)(y) VJN, (C)(y) VJQ and (C)(y) VNQ, and

wherein the heavy syllable is given a higher priority than the light syllable and the superheavy syllable takes precedence over the heavy syllable for being selected as Extended CV.

28. (New) A speech synthesis device comprising:

dividing means for dividing the phonetic information into Extended CVs upon receiving the phonetic information of speech sound to be synthesized;

speech waveform composing means for generating speech waveform data in a unit of Extended CV divided with the dividing means, and for obtaining speech waveform data to be composed by means of concatenating the speech waveform data in a unit of each Extended CV;
and

 analog converting means for converting the speech waveform data provided from the speech waveform composing means into analog signals of speech sound;

wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV contains at least one of a consonant C excluding a geminated sound (Japanese SOKUON), a semi vowel, and a syllabic nasal, a semi vowel y, a vowel V excluding a latter part of a long vowel and a second element of a diphthong, a latter part of a long vowel R, the second element of a diphthong J, a geminated sound Q, and a syllabic nasal N,
and

wherein the phoneme sequence with heavier syllable weight is selected first as the Extended CV, assuming the syllable weight of C and y to be "0", and a syllable weight of V, R, J, Q and N to be "1".

29. (New) A speech synthesis device comprising:

dividing means for dividing the phonetic information into Extended CVs upon receiving the phonetic information of speech sound to be synthesized;

speech waveform composing means for generating speech waveform data in a unit of Extended CV divided with the dividing means, and for obtaining speech waveform data to be composed by means of concatenating the speech waveform data in a unit of each Extended CV; and

analog converting means for converting the speech waveform data provided from the speech waveform composing means into analog signals of speech sound;

wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV includes at least a heavy syllable with a syllable weight of "2" selected from a group consisting of (C)(y) VR, (C)(y) VJ, (C)(y) VN and (C)(y) VQ and a light syllable with the syllable weight of "1" as defined by (C)(y) V,

wherein the heavy syllable is given a higher priority than the light syllable for being selected as Extended CV,

wherein (C) denotes that C or some Cs are attached to V, and

wherein (y) denotes whether y or ys are attached to V.

30. (New) The speech synthesis device of claim 29, wherein the Extended CV further includes a superheavy syllable with a syllable weight of "3" such as (C)(y) VRN, (C)(y) VRQ, (C)(y) VJN, (C)(y) VJQ and (C)(y) VNQ, and

wherein the heavy syllable is given a higher priority than the light syllable and the superheavy syllable takes precedence over the heavy syllable for being selected as Extended CV.

31. (New) A computer-readable storing medium for storing a program for executing speech synthesis using a computer, the program comprising the steps of:

dividing phonetic information into Extended CVs upon receiving the phonetic information of speech sound to be synthesized;

generating speech waveform data in a unit of Extended CV; and

obtaining speech waveform data to be composed by means of concatenating the speech waveform data in a unit of each Extended CV;

wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV contains at least one of a consonant C excluding a geminated sound (Japanese SOKUON), a semi vowel, and a syllabic nasal, a semi vowel y, a vowel V excluding a latter part of a long vowel and a second element of a diphthong, a latter part of a long vowel R, the second element of a diphthong J, a geminated sound Q, and a syllabic nasal N, and

wherein the phoneme sequence with heavier syllable weight is selected first as the Extended CV, assuming the syllable weight of C and y to be "0", and a syllable weight of V, R, J, Q and N to be "1".

32. (New) A computer-readable storing medium for storing a program for executing speech synthesis using a computer, the program comprising the steps of:

dividing phonetic information into Extended CVs upon receiving the phonetic information of speech sound to be synthesized;

generating speech waveform data in a unit of Extended CV; and

obtaining speech waveform data to be composed by means of concatenating the speech waveform data in a unit of each Extended CV;

wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV includes at least a heavy syllable with a syllable weight of "2" selected from a group consisting of (C)(y) VR, (C)(y) VJ, (C)(y) VN and (C) (y) VQ and a light syllable with the syllable weight of "1" as defined by (C)(y) V,

wherein the heavy syllable is given a higher priority than the light syllable for being selected as Extended CV,

wherein (C) denotes that C or some Cs are attached to V, and

wherein (y) denotes whether y or ys are attached to V.

33. (New) The speech synthesis device of claim 32, wherein the Extended CV further includes a superheavy syllable with a syllable weight of "3" such as (C)(y) VRN, (C)(y) VRQ, (C)(y) VJN, (C)(y) VJQ and (C)(y) VNQ, and

wherein the heavy syllable is given a higher priority than the light syllable and the superheavy syllable takes precedence over the heavy syllable for being selected as Extended CV.

34. (New) A computer-readable storing medium for storing a program for executing dividing process using a computer, the program comprising the step of:

dividing phonetic information into Extended CVs defined as follows, upon receiving the phonetic information;

wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV contains at least one of a consonant C excluding a geminated sound (Japanese SOKUON), a semi vowel, and a syllabic nasal, a semi vowel y, a vowel V excluding a latter part of a long vowel and a second element of a diphthong, a latter part of a long vowel R, the second element of a diphthong J, a geminated sound Q, and a syllabic nasal N, and

wherein the phoneme sequence with heavier syllable weight is selected first as the Extended CV, assuming the syllable weight of C and y to be "0", and a syllable weight of V, R, J, Q and N to be "1".

35. (New) A computer-readable storing medium for storing a program for executing dividing process using a computer, the program comprising the step of:

dividing phonetic information into Extended CVs defined as follows, upon receiving the phonetic information;


wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV includes at least a heavy syllable with a syllable weight of "2" selected from a group consisting of (C)(y) VR, (C)(y) VJ, (C) (y) VN and (C)(y) VQ and a light syllable with the syllable weight of "1" as defined by (C)(y) V,

wherein the heavy syllable is given a higher priority than the light syllable for being selected as Extended CV,

wherein (C) denotes that C or some Cs are attached to V, and

wherein (y) denotes whether y or ys are attached to V.

 36. (New) A computer-readable storing medium for storing a speech database, the database comprising:

a waveform data area that stores sample speech waveform data divided into Extended CV; and

a phonetic information area that stores the phonetic information associated with sample speech waveform data in a unit of each Extended CV;


wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV contains at least one of a consonant C excluding a geminated sound (Japanese SOKUON), a semi vowel, and a syllabic nasal, a semi vowel y, a vowel V excluding a latter part of a long vowel and a second element of a diphthong, a latter part of a long vowel R, the second element of a diphthong J, a geminated sound Q, and a syllabic nasal N, and

wherein the phoneme sequence with heavier syllable weight is selected first as the Extended CM assuming the syllable weight of C and y to be "0" and a syllable weight of V, R, J, Q and N to be "1"

37. (New) A computer-readable storing medium for storing a speech database, the database comprising:

a waveform data area that stores sample speech waveform data divided into Extended CV; and

 a phonetic information area that stores the phonetic information associated with sample speech waveform data in a unit of each Extended CV;

wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV includes at least a heavy syllable with a syllable weight of "2" selected from a group consisting of (C)(y) VR, (C)(y) VJ, (C) (y) VN and (C)(y) VQ and a light syllable with the syllable weight of "1" as defined by (C)(y) V,

wherein the heavy syllable is given a higher priority than the light syllable for being selected as Extended CV,

wherein (C) denotes that C or some Cs are attached to V, and

wherein (y) denotes whether y or ys are attached to V.

38. (New) A computer-readable storing medium for storing phonetic information data to be used for speech processing,

wherein the phonetic information data is characterized by being handled in a unit of Extended CV provided with division information per Extended CV,

wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV contains at least one of a consonant C excluding a geminated sound (Japanese SOKUON), a semi vowel, and a syllabic nasal, a semi vowel y, a vowel V excluding a latter part of a long vowel and a second element of a diphthong, a latter part of a long vowel R, the second element of a diphthong J, a geminated sound Q, and a syllabic nasal N, and

A2 wherein the phoneme sequence with heavier syllable weight is selected first as the Extended CM assuming the syllable weight of C and y to be "0", and a syllable weight of V, R, J, Q and N to be "1".

39. (New) A computer-readable storing medium for storing phonetic information data to be used for speech processing,

wherein the phonetic information data is characterized by being handled in a unit of Extended CV provided with division information per Extended CV,

and wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV includes at least a heavy syllable with a syllable weight of "2" selected from a group consisting of (C)(y) VR, (C)(y) VJ, (C)(y) VN and (C)(y) VQ and a light syllable with the syllable weight of "1" as defined by (C)(y) V,

wherein the heavy syllable is given a higher priority than the light syllable for being selected as Extended CV,

wherein (C) denotes that C or some Cs are attached to V, and

wherein (y) denotes whether y or ys are attached to V.

40. (New) A computer-readable storing medium for storing a phoneme dictionary to be used for speech processing,

wherein the phoneme dictionary contains a contour of vocal tract transmission function of each phoneme associated with phonetic information ma unit of Extended CV,

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wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV contains at least one of a consonant C excluding a geminated sound (Japanese SOKUON), a semi vowel, and a syllabic nasal, a semi vowel y, a vowel V excluding a latter part of a long vowel and a second element of a diphthong, a latter part of a long vowel R, the second element of a diphthong J, a geminated sound Q, and a syllabic nasal N, and

wherein the phoneme sequence with heavier syllable weight is selected first as the Extended CV, assuming the syllable weight of C and y to be "0", and a syllable weight of V, R, J, Q and N to be "1".

41. (New) A computer-readable storing medium for storing a phoneme dictionary to be used for speech processing,

wherein the phoneme dictionary contains a contour of vocal tract transmission function of each phoneme associated with phonetic information in a unit of Extended CV;

wherein the Extended CV refers to a contiguous sequence of phonemes without clear distinction containing at least one vowel,

wherein the Extended CV includes at least a heavy syllable with a syllable weight of "2" selected from a group consisting of (C)(y) VR, (C)(y) VJ, (C)(y) VN and (C)(y) VQ and a light syllable with the syllable weight of "1" as defined by (C)(y) V,

wherein the heavy syllable is given a higher priority than the light syllable for being selected as Extended CM, and

wherein (C) denotes that C or some Cs are attached to V, and wherein (y) denotes whether y or ys are attached to V.
